

U.S. Patent Application No. 09/945,340
Amendment dated March 28, 2005
Reply to Office Action of December 29, 2004

REMARKS

In the Office Action dated December 29, 2004 in the above-identified application, claims 1-10 and 16-79 were rejected or provisionally rejected and claims 11-15 were withdrawn from consideration. The Examiner indicated that claims 17, 18, 20, 21, 27 and 78 contain allowable subject matter. In this response, claims 1 - 4, 6-10, and 77 are canceled, and claim 5 is amended. In particular, claim 5 is amended to incorporate the alternatives of claims 16 - 27, 56 - 62 and 78-79, so that the organic group of claim 5 is one of the groups defined in these claims. The amendment is fully supported by the present specification and the claims as originally filed and does not introduce new matter. Reconsideration and continued examination of the above-identified application are respectfully requested.

Conflict of claims 1 - 6 and 8 - 10 with claims 1 - 6 and 8 - 10 of Application No. 09/654,182

At page 2 of the Office Action, the Examiner alleged that claims 1-6 and 8-10 conflict with claims 1-6 and 8-10 of Application No. 09/654,182. (In the Office Action in Application No. 09/654,182, the Examiner makes reference to Application No. 09/945,350, but apparently meant Application No. 09/945,340. Please confirm.) This rejection is moot because claims 1-4 and 6-10 of the present application have been canceled and claim 5 is amended to incorporate the alternatives of claims 16-27, 56-62 and 78-79, so that the organic group of claim 5 is one of the groups defined in these claims. Accordingly, this objection should be withdrawn.

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Rejection of claims 16 - 79 under the judicially created doctrine of obviousness-type double patenting over claims 16 - 49 of Application No. 09/654,182

At page 2 of the Office Action, the Examiner provisionally rejected claims 16-79 under the judicially created doctrine of obviousness-type double patenting over claims 16-49 of copending Application No. 09/654,182. (The Examiner actually refers to Application No. 09/645,182, but this appears to be a typographical error. The Examiner is requested to confirm this point.) In response, in order to advance the prosecution and without conceding the correctness of the rejection, a Terminal Disclaimer is filed herewith, thereby overcoming the rejection.

Rejection of claims 1 and 5 - 10 under the judicially created doctrine of obviousness-type double patenting over claims 1 - 20 of U.S. Patent No. 6,787,029 in view of Betz et al.

At page 3 of the Office Action, the Examiner rejected claims 1 and 5-10 under the judicially created doctrine of obviousness-type double patenting over claims 1-20 of U.S. Patent No. 6,787,029 in view of Betz et al. (U.S. Patent No. 5,653,494). This rejection is moot because claims 1 and 6-10 have been canceled and claim 5 is amended to incorporate the alternatives of claims 16-27, 56-62, and 78-79, so that the organic group of claim 5 is one of the groups defined in these claims. Therefore, the rejection should be withdrawn.

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Rejection of claims 1 - 10, 16, 19, 22 - 26, 50 - 51, 56 - 62, 77 and 79 over claims 1 - 45 of U.S. Patent No. 6,740,151 in view of Betz et al.

At page 3 of the Office Action, the Examiner rejected claims 1-10, 16, 19, 22-26, 50-51, 56-62, 77 and 79 under the judicially created doctrine of obviousness-type double patenting over claims 1-45 of U.S. Patent No. 6,740,151 in view of Betz et al. The Examiner alleged that the patent claims show carbon with an attached organic group. The Examiner acknowledged that U.S. Patent No. 6,740,151 fails to disclose the use of a carbon particle in a chromatography column and method. The Examiner alleged that Betz et al. shows the use of carbon particles bonded with polymers as being useful in chromatography. The Examiner alleged that it would have been obvious to use the granulated carbon particles of U.S. Patent No. 6,740,151 in a chromatography separation method and column because Betz et al. shows the use of carbon particles bonded with polymers as chromatographic material. For the following reasons, this rejection is respectfully traversed.

The Examiner acknowledged that the patented claims of U.S. Patent No. 6,740,151 do not disclose the use of the carbon black product having attached organic groups for chromatography. Still further, it is respectfully submitted that the patented claims of U.S. Patent No. 6,740,151 do not contain any teaching at all as to how the attached organic groups would affect any physical properties, such as any adsorptive properties, of its carbon black product, such as in chromatography. Accordingly, the patented claims of U.S. Patent No. 6,740,151 do not provide any guidance whatsoever as to how the attached organic groups would affect the suitability or unsuitability of the material of U.S. Patent No. 6,740,151 in any separation device.

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The claimed uses for the material of U.S. Patent No. 6,740,151, such as a filler or additive for plastic compositions, paper products, elastomers, or rubber compositions, are very different from the use of a material in a separation device and therefore do not provide any guidance or suggestion for the use of the material in a separation device. The Examiner alleged that Betz et al. shows that the use of carbon particles bonded with polymers are useful in chromatography, and alleged that this disclosure would make it obvious to use the carbon particles having attached organic groups of U.S. Patent No. 6,740,151 in a chromatographic column. The Examiner is clearly in error in his interpretation of Betz et al. Betz et al. relates to structures such as chromatographic column walls and fibers that have carbon particles, zeolite, alumina, silica or organic polymers bound onto the column walls. Betz et al. does not teach or suggest any carbon particles having attached organic groups. The only mention of a polymer bonded to the carbon particles in Betz et al. is a siloxane polymer that binds directly to the carbon particle to attach the particle to a column wall or fiber (see, for example, col. 1, lines 15-20). A siloxane polymer is not an organic group. Betz et al. also states, as an alternative to carbon particles, that an adsorbent organic polymer such as poly(divinylbenzene) can be attached to a column wall or fiber through a siloxane polymer (see col. 8, line 56 to col. 9, line 19). The organic polymer is therefore a separate and distinct category of material that can be attached to the column wall or fiber, as an alternative to carbon particles, zeolite, alumina or silica. Betz et al. does not teach or suggest a chromatographic column having both a carbon particle and an adsorbent organic polymer and does not teach a carbon particle having an organic polymer of any kind attached to it. Moreover, Betz et al. states that its carbon particle is attached directly to a chromatographic

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column by way of a carbon-silicon bond that connects the surface of the carbon particle with a siloxane. Betz et al. contains no teaching how a carbon particle having attached organic groups could form a carbon-silicon bond between the surface of the carbon particle and a siloxane. Accordingly, a person skilled in the art would not be taught that the material of the patented claims of U.S. Patent No. 6,740,151, which is claimed as a filler or additive for plastic compositions, paper products, elastomers, or rubber compositions, can used in a separation device and the Examiner has not provided any motivation to combine the material of the patented claims of U.S. Patent No. 6,740,151 with the alleged teachings of Betz et al. Accordingly, neither the patented claims of U.S. Patent No. 6,740,151 nor Betz et al., alone or in combination provide any teaching, suggestion or motivation to use a carbon product having attached organic groups in any separation device, and claims 1-10, 16, 19, 22-26, 50-51, 56-62, 77 and 79 are clearly patentable over these references.

Rejection of claims 1 - 10, 16, 19, 22 - 26 and 28 - 77 under 35 U.S.C. 103(a) over Boes et al. in view of Betz et al.

At page 5 of the Office Action, the Examiner rejected claims 1-10, 16, 19, 22-26 and 28-77 under 35 U.S.C. 103(a) over Boes et al. (U.S. Patent No. 5,807,494) in view of Betz et al. The Examiner alleged that Boes et al. shows a carbon particle having attached organic groups. The Examiner alleged that the generic group in Boes et al. would disclose the organic groups as claimed with enough specificity to one having ordinary skill in the art. The Examiner further alleged that Boes et al. discloses a mixture of organic groups, which would read on the second

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organic group attached on the carbon material. The Examiner further alleged that Boes et al. further discloses the use for the carbon material including adsorbents and filters. The Examiner acknowledged that Boes et al. does not disclose the use of the material in a chromatography column and method, but alleged that Betz et al. shows the use of carbon particles bonded with polymers are useful in chromatography. The Examiner takes the position that it would have been obvious to use the carbon particles bonded with polymers as chromatographic materials. For the following reasons, this rejection is respectfully traversed.

The material of Boes et al. is clearly not the same as the material of the present invention. Boes et al. relates to a gel that is formed by a sol-gel reaction in which a carbonaceous component such as a modified carbon black product is added to the sol (see Example 12 of Boes et al.), so that the carbonaceous component becomes attached and incorporated into the gel. Boes et al. teaches that its material can be used for a wide variety of uses, including thermal insulation, electrical insulation, acoustic insulation, fillers, flatters, thickeners, reinforcing agents, adsorbent, catalytic support membranes, filters, radiation detectors, heat resistant coatings and low K dielectrics (col. 7, line 27 to col. 8, line 30 of Boes et al.) Although this long list of uses does include adsorbents and membranes for selective separation, these are given as uses for the gel composition. Boes et al. does not teach any use of a carbonaceous material by itself and not combined with a metal oxide in a gel composition. The material of the present invention, on the other hand, comprises a carbonaceous material having attached at least one organic group. In other words, the material of the present invention is not a gel and is not combined with a metal oxide. Accordingly, since the material of the present invention and the material of Boes et al. are

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different, the combination of Boes et al. with Betz et al. would not result in a separation device of the present invention.

Moreover, even if the material of Boes et al. could be combined with the structure of Betz et al, the Examiner has not provided any motivation for doing so. The Examiner acknowledged that Boes et al. does not teach or suggest the use of its gel compositions for chromatography. Still further, Boes et al. does not teach any physical properties of its gel compositions, or any improvements provided by its carbonaceous material that would suggest a use of a carbonaceous material having attached organic groups that is not part of a gel composition for a separation device. The Examiner cites Betz et al., which shows structures such as chromatographic column walls and fibers that have carbon, zeolite, alumina, silica or organic polymers bound onto the column walls, for its alleged teachings of the use of carbon-containing adsorbents in chromatography, but has not provided any motivation to combine the material of Boes et al. with the teachings of Betz et al. As discussed above, the Examiner is clearly in error in alleging that Betz et al. shows that the use of carbon particles bonded with polymers are useful as chromatographic materials. Betz et al. does not teach or suggest any carbon particles having attached organic groups. Moreover, Betz et al. teaches that its carbon particle is attached directly to a chromatographic column by way of a carbon-silicon bond that connects the surface of the carbon particle with a siloxane. Betz et al. contains no teaching how a carbon particle having attached organic groups as in the present invention or a gel composition of Boes et al. could form a carbon-silicon bond between the surface of the carbon particle and a siloxane. Accordingly, neither Boes et al. nor Betz et al., alone or in combination provide any teaching, suggestion or

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motivation to use a carbonaceous material having attached organic groups in any separation device, and claims 1-10, 16, 19, 22-26 and 28-77 are clearly patentable over these references.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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